

What is claimed is:

1. A method of forming an isolation layer in a semiconductor device, comprising the steps of:

5 sequentially forming a tunnel oxide film and a pad nitride film on a semiconductor substrate and then forming an aperture through which an isolation region of the semiconductor substrate is exposed;

forming a V type trench at the isolation region;

forming an insulating film spacer at the sidewall of the pad nitride film
10 in the aperture;

forming an ion implantation layer for accelerating oxidization at the bottom of the V type trench that is exposed through the aperture;

forming a first insulating film at the V type trench by means of an oxidization process;

15 burying the aperture on the first insulating film with a second insulating film; and

removing the pad nitride film and the pad oxide film.

2. The method as claimed in claim 1, wherein a tilt angle of the V
20 type trench is $25 \sim 45^\circ$.

3. The method as claimed in claim 1, wherein the ion implantation layer is formed by implanting arsenic (As).

4. The method as claimed in claim 3, wherein arsenic (As) is implanted with energy of 15 ~ 50keV.

5. The method as claimed in claim 3, wherein the dose of
5 implantation of As is $1\text{E}14 \sim 1\text{E}16\text{cm}^{-2}$.

6. The method as claimed in claim 1, wherein the oxidization process is performed at a temperature of 800 ~ 950°C by setting an oxidization target thickness of 300 ~ 1000Å, whereby the first insulating film
10 is formed in thickness of 1500 ~ 4000Å by means of the ion implantation layer for accelerating oxidization.

7. The method as claimed in claim 1, wherein the second insulating film is formed using a HDP oxide film and is formed in thickness of
15 2000 ~ 5000Å.